

beanz STEAM Gift Guide 2017

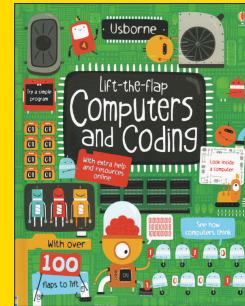
<https://beanz.com//steam-tools>

This resource lists all kinds of STEAM tools for kids, organized by grade level.



LAURA LAROSE, FLICKR

STEAM Books



Lift-the-Flap Computers and Coding

Over 100 flaps to learn how computers and programming works. Great for all ages (because most people don't know much about computers). <http://bit.ly/2ceT6o9>

The Big Book of Maker Space Projects

Written by two school librarians who love hands-on, low-cost, classroom-tested projects for all ages. Wishlists on their book site make it easy to find what you need. Recyclable hacks, musical instruments, paper and sewing circuits, and tons more. <https://colleengraves.org/bigmakerbook/>

Lauren Ipsum

No Starch Press re-issued *Lauren Ipsum*, which explains CS concepts in a fun and often wacky way similar to *Alice in Wonderland*. Re-read the text to realize you've learned a key concept in CS and computing! <https://nostarch.com/laurenipsum>

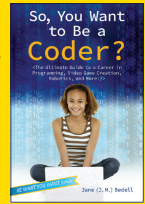
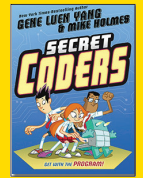


Secret Coders

Four graphic novels weave coding into adventure stories and puzzles about students who solve mysteries at their school. Written and illustrated by a high school computer science teacher. <http://secret-coders.com/>

So You Want to Be a Coder?

This book is about the other part of software programming: What skills do programmers use and need to know? What do they do all day? <http://bit.ly/12xErnz>



Robots

Sphero

While they have evolved their robots to celebrate *Star Wars* this fall, all their robots are fun, easy to use, and offer a path for kids who want to do more. You'll need a phone or tablet to connect to your *Sphero* and direct it. *Sphero* software also includes OVAL, a C-like language to learn to write code. <http://sphero.com>



Code-a-pillar

Dash and Dot

These cute, round robots from the **Wonder Workshop** are for elementary school age kids. The *Dash and Dot* robots can be programmed with *Blockly*, a fairly easy language to master. With *Blockly* you create a step. A combination of steps determines how the robot will move, when it will move, and what it will do. <http://bit.ly/2cYpAWi>

LEGO Mindstorms

Take the LEGO concept, add icon-based programming, wheels, legs, and other mobile pieces, and you have LEGO *Mindstorms*. You can build simple or more complicated robots to perform tasks. They respond to touch and are controlled by a remote control. *Mindstorms* also includes an active online community with lots of ideas to try. <http://mindstorms.lego.com>

Cubetto

This robot requires no computer screen, only play. Program the *Cubetto* robot with touch, pressing down block shapes in order to tell the robot what to do. You don't need to know English, or any language, to make the robot move. It's a clever idea geared towards younger kids.

Code-a-pillar

This *Fisher-Price* learning toy is in the shape of a caterpillar. Kids experiment as they develop problem solving, planning, and critical thinking skills. Change its segments to make the caterpillar go different places. <http://bit.ly/2cAbAjf>

Ozobot

Two small robots, *Evo* and *Bit*, provide a deceptive amount of learning opportunities, creativity, and fun. <http://ozobot.com/>



Apps

Bitsbox

Kids learn to code by making games on the *Bitsbox.com* website, and then play them on their phone or tablet. The games are quite clever with fun, bright graphics. And it's easy for kids to adapt the code once they figure out the game, while learning and becoming comfortable with code. A new box of games arrives each month. Ages 5 and up. <http://bitsbox.com>

Bitsbox



Codea

If you are self-sufficient, don't mind looking up help, and like to take things apart, *Codea* is for you! An iPad app to create games, you can adapt existing code or create from scratch. There are few limits on what you can create.

Ages 10+. <http://twolivesleft.com/Codea/>

Hopscotch

This iPhone and iPad app uses blocks you drag and drop

to create effects. It has a strong community of kids who often come up with creative ways to have fun. Ages 5+. <http://gethopscotch.com>

Tynker

Many US kids are familiar with *Tynker* from their classrooms. *Tynker* is a block language, meaning you drag and drop blocks and configure them. It's easy and fun to move blocks around, find sprite images, and make the blocks do things. Ages 5+. <https://www.tynker.com/>

Move the Turtle

Little kids can move a "turtle" around the screen by setting direction and the number of steps in order to create artwork and solve problems. The game teaches basic coding ideas and prepares kids for block languages like *Scratch*, *Hopscotch*, and *Tynker*. <http://movetheturtle.com>

Swiftie, Touch Lua, Python 3.4

For kids ready to code, there are apps that let them learn how to code with *Swift* (*Swiftie*), *Lua* (*Touch Lua*), and *Python* (*Python for iOS*). *SoloLearn* has a number of apps and languages. Find them in the App Store and Google Play. Another great option? Find *Python* projects in books or online, then try them out with the *Repl.it* website.

Run Marco!

A coding adventure game in English and 26 other languages. Kids use conditional logic and critical thinking skills to help Marco get through his adventures. <https://allcancode.com/runmarco>

The Foos

This iPhone and iPad app helps kids ages 5-10+ work through levels where they can play and learn basic programming and computer science skills. <https://thefoos.com/>

Electronics Kits

Today's electronic kits often don't require soldering and other semi-risky skills. Kids and adults can snap together kits, then tinker with hardware and software. It's great hands on fun, as well as a way to learn more in depth how computers work. Kits range in complexity from snap together to basic boards with lots of online tutorials. They make fun holiday gifts for older kids who have patience and persistence.

Piper

Follow real engineering blueprints to build your own computer then use *Pipercraft*, a *Minecraft* mod, to configure it. You also can build gadgets with electronic boards. Steve Wozniak, co-founder of Apple, apparently loves Piper. Includes wood case. <https://playpiper.com/>

Kano

This is a very simple snap together computer kit. The brains are powered by a Raspberry Pi and Kano includes an excellent operating system designed for kids. Also includes an online community to share ideas. <https://kano.me>

Jewelbots

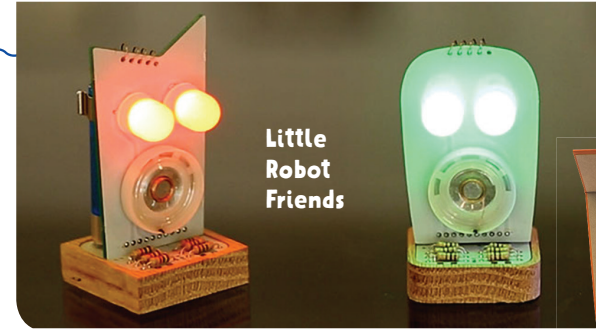
An unusual but really neat idea for kids who want to create friendship bracelets with functionality they can code. <http://jewelbots.com/>



Jewelbots

Tech Will Save Us

Educational tech toys that are kits kids can build to mix building, craft, science, tech, coding, and fun. Their *Mover Kit* is like a *DIY Jewelbots*. <https://techwillsaveus.com>



Little Robot Friends

Redfern

They sell their Crumble board with robot kits with motors, LEDs, and sensors. All programmable with a Scratch-like drag and drop language. <https://redfernelectronics.co.uk/>

Little Robot Friends

These cute little robots respond to light, touch, voice, and infrared inputs. They also blink, beep, and buzz. Plus coding! <http://littlerobotfriends.com/>

littleBits

Easy snap-together electronic pieces make a large number of different kits, and make it fun to invent things. <http://littlebits.cc/>

TinkerCrate

A monthly STEM project arrives in the mail with materials, blueprints, and many ideas for learning and fun activities. <http://www.kiwicrate.com/tinker>



Kano



Piper

Board Games

Some of the best ways to learn about programming are through board and card games. You don't need electricity or a computer, and they're fun for little kids, bigger kids, and families. And don't forget chess, Go, backgammon, and other traditional games which are fun and teach problem solving and strategy skills.

Robot Turtles

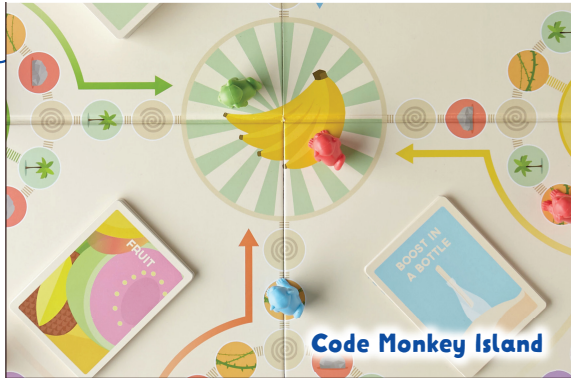
Robot Turtles is a great board game with an online community where you can create your own game boards. These games sometimes let you replace the object you direct with a favorite person, adding another level of fun and engagement. <http://thinkfun.com/roboturtles/>

Code Monkey Island

Programming, mysteries, and fun for kids ages 8 and older. If played as a family, it's likely younger kids will understand the game too. Use cards to move a monkey around the island as kids learn strategic thinking, logic, and how to adapt. <http://codemonkeyplanet.com/>

Code Master

This single player game, from the makers of *Robot Turtles*, has 60 levels you work through to learn programming logic. Only one path leads to the crystal and wins



the game. <http://thinkfun.com/codemaster>

Bits and Bytes

This card game teaches basic computing skills: logic, problem solving, and critical thinking. The game is absorbing and flexible. No need for a computer.

<http://bitsandbytes.cards/>

Littlecodr

This deceptively simple card game for kids 4-8 lets them lay out a series of steps for others to follow. When they master the basic game, they can add more advanced cards. <http://littlecodr.com/>

Notable Women in Computing Card Deck

A traditional 52-card deck featuring women who have contributed to technology. It can be used to play *Fish* and any classic card game.

The makers also offer cards with women from the Middle East and Africa,

as well as posters for both cards. It's also possible to download the poster and cards to print locally if you can't pay \$10 USD for cards or \$25 USD for the posters.

<http://notabletechnicalwomen.org/gigglechips>

Giggle Chips

A set of creative game cards created by a mom and her young, doodling daughter that teach computer science concepts in a fun, visual way.

<http://gigglechips.bigcartel.com/>



CodingFarmer

Players make their way to a farmhouse, navigating tractors past obstacles, recharging at windmills, and relaxing at rest stops. Game can be played with instructions in English or Java code. <http://bit.ly/2cMghWd>

CodingsGood

Two-player card game for kids 10 years and up. Basic, Intermediate, and Advanced cards let kids challenge each other in their knowledge of Python, an accessible programming language. <http://bit.ly/1YhWVKo>

Bits and Bytes



Virtual Reality

Virtual reality kits vary only in quality of the experience—the ability to trick your eyes and ears into believing the digital world around you is real. For headsets connected to computers, virtual reality also requires the latest video cards and processors to stream data to the headset without interruption.

MAURICIO PESCE, FLICKR

Where to begin if you want to try VR out? *Google Cardboard* is the least expensive place to start. All you need is their viewer and a phone to create a headset. More expensive headsets connect to smartphones, Playstation, computers, and other platforms. *Vive*, for example, has a headset that uses base stations to fix your position once connected to your computer.

If you choose one of the high end virtual reality kits, be aware of exclusive software, DRM (digital rights management), and other things that will limit your ability to try out software. For example, software built solely for one virtual reality platform means other platforms can't use it. And open platforms can use software from anywhere as long as it conforms to basic standards.

Google Cardboard

For \$20-\$30 USD you can buy a cardboard headset then slide in a modern smartphone and use VR apps. While not as immersive as the *HTC Vive*, the experience is as amazing as more expensive options.

<https://vr.google.com/cardboard/>

Vive

While this is the most elaborate VR setup, the use of base stations to fix your position places you accurately in a VR world. At the least, definitely find a Microsoft store with an *HTC Vive* setup and try it out. It's amazing. Oculus Rift is worth a look, but may offer content that only works on a Rift.

<https://www.vive.com>

<https://www.microsoft.com/en-us/store/locations/htcvive/>

Playstation VR

The *Playstation* platform has added virtual reality to its games. You need a *Playstation 4*, but if yours is an older model, or you don't have one and want to buy, the VR version of the platform could be lots of fun.

<https://www.playstation.com/en-us/explore/playstation-vr/>



HTC Vive

Google Cardboard



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